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UNITED STATES PATENT APPLICATION

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for

SCREENING DEVICE

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Screening Device

The present invention relates to screening devices. More particularly the invention relates to changing tubes for use in changing in and out of clothing in public places, for example whilst on a beach. As will become apparent, a changing tube may be used to change in and out of clothing in a wide range of different locations, for example by the side of lakes, on camp sites etc.

Swimming in the sea or lakes is a popular pastime particularly in warm summer weather. However, it is usually necessary at some point for an individual to change in and out of his/her swimming costume, to dry himself with a towel etc by the side of the water. Different devices have been provided to allow individuals to change in comfort and privacy whilst at the beach. A well know example is a windbreaker.

A simple embodiment of a windbreaker comprises a plurality of poles to which are attached a sheet of material. In use the poles are driven into the ground. The poles then support the sheet of material. The suspended sheet of material protects an individual from the wind and provides a screen behind which an individual may change.

However, windbreakers have several disadvantages. They only provide a screen in a limited number of directions. It is common to set the windbreaker up so that people may sit downwind of the breaker out of the wind. In such circumstances the windbreaker does not provide privacy from people sat down wind of the breaker. Further, the use of, usually wooden, poles makes carrying the screen cumbersome. Erecting such windbreakers requires driving poles into the sand (usually by use of a mallet) and consequently it is usual to set a screen up in one location and leave it erected in that position throughout a day trip to the beach. This reduces the flexibility of use of windbreakers. The present invention aims to alleviate some of the problems associated with the prior art.

According to a first aspect of the present invention there is provided a screening tube having a stored state and a deployed state, the tube being self supporting when in a deployed state and being collapsible from the deployed state to the stored state, the tube comprising a flexible tubular sheet that defines a screened space within the bore of the tube.

The tube may comprise a coil to support walls of the screening tube. The coil may be a compression spring. When the coil is a compression spring the screening tube may comprise restriction means for restricting expansion of the

compression spring when the tube is in the deployed state. The restriction means may be adjustable to allow adjustment of the height of the screening tube when the tube is in the deployed state.

The coil may be a tension spring. In this case the screening tube comprises a support member to support the tube when the tube is in the deployed state.

The screening tube may comprise a compressible screening member in at least a portion of a wall of the tube to support the walls of the screening tube when the tube is in the deployed state.

The coil may be an inflatable coil. By adjusting the inflation of the coil, the height of the screening tube may be varied. Inflation of the coil may cause the coil to press the sides of the screening tube outwards, expanding the space screened by the screening tube.

The screening tube may be open at both ends. The screening tube may comprise a removable base portion.

The screening tube may comprise means for securing the tube to the ground. The means for securing the tube to the ground may comprise spikes arranged

for placement in the ground.

The tube may be of circular cross section. Where the screening tube has a circular cross section the tube is particularly easy to change in. The circular section allows equal room in every direction for an individual changing in the centre of the tube. An individual is therefore less likely to knock against the sides of the tube whilst changing.

The screening tube may be of square cross section. In the case where the screening tube is of square cross section the screening tube is particularly convenient to store. In its collapsed state a square screening tube may be conveniently stored in boxes, on shelves etc.

The screening tube may be of polygonal cross section. The polygon may be a regular polygon. Alternatively the polygon may be and irregular polygon.

When in the stored state the changing tube may be useable as a buoyancy aid.

Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not

exclusion of any other element, integer or step, or group of elements, integers or steps.

A changing tube which embodies this invention is described now by way of example only, with reference to the accompanying drawings, of which:

Figure 1 shows a circular changing tube;

Figures 2a and 2b is a part section through the wall of the changing tube showing different ways in which material may be attached to a coil of the changing tube shown in figure 1;

Figure 3 shows a removable base portion for use with the changing tube shown in figure 1;

Figure 4 shows the changing tube of figure 1 in a stored state;

Figure 5 shows a square changing tube.

Figure 1 shows a changing tube 1 of generally circular cross-section in its deployed state. The changing tube comprises two circular hoops 11 located at

either end of the changing tube 1 and interconnected by a wall 15 of opaque material. The hoops 11 are made of low density plastics material. The changing tube 1 further comprises a coil 13 disposed between the two hoops 11. The ends of the coil 13 are attached to the hoops 11.

The coil 13 is an aluminium coil. However, in alternative embodiments the coil may be made of plastics material or another metal. The coil may be a conventional compression spring. Alternatively the coil may be a coiled hollow tube sealed at either end.

When the changing tube 1 is in the deployed state, the coil 13 is at its natural length or near to its natural length. The spring 13 may be compressed by bringing the two hoops 11 together and releasably securing the hoops 11 together. When the two hoops 13 are adjacent to each other, the changing tube is in its stored state.

The wall 15 is made up of an opaque material, in particular the wall 15 is made up of nylon material. Figure 2A shows a part section of the arrangement of the wall 15. The wall 15 comprises and outer wall 12 and an inner wall 21. The inner wall 21 is made of the same material as the outer wall 15. The section shown in Figure 2A is from the right hand side of the changing tube 1

as shown in Figure 1. The inner wall 21 and the outer wall 12 are attached either side of the coil 13.

Figure 2B shows an alternative embodiment in which the wall 15 of the changing tube has only a single outer wall 12 located on the outside of the circular coil 13.

Figure 1 also shows a pair of adjustment straps 17 located between the pair of hoops 11. Each adjustment strap 17 is attached to both hoops 11 and is of adjustable length. When the changing tube 1 is in the deployed state as shown in Figure 1 the adjustment strap 17 acts to restrict the expansion of the coil 13. Adjustment of the length of the straps 17 therefore allows adjustment of the height of the changing tube 1.

Figure 3 shows a removable base portion 3 for use with the changing tube 1. The removable base portion 3 has a base hoop 31 over which base material 33 is stretched. The removable base portion 3 has four spikes 35. The removable base portion further has attachment means (not shown) in order to attach the removable base portion to a changing tube 1.

In use, the removable base portion 3 is placed on a desired location on the

ground and pressed downwards in order to drive the spikes 35 into the ground. A changing tube 1 in its stored state, with the coil 13 compressed, is then placed over the removable base portion 3 and attached to the removable base portion using the attachment means. A user then stands on the removable base portion 3 and deploys the changing tube 1 by releasing securing means 41 (shown in Figure 4). When the user has finished using the changing tube he may return the changing tube to its stored state by pulling the upper hoop 11 towards the ground. In this manner the coil 13 is compressed. When the upper hoop 11 has been moved down to the lower hoop 11 the two hoops are secured together using the securing means 41. Figure 4 shows a changing tube in its stored state held in this stored state by the securing means 41.

When in the stored state, the changing tube 1 may be used as a buoyancy aid. The buoyancy of the changing tube 1 is provided by the low density plastic hoops 11 which cause the changing tube to float on water.

In alternatives, buoyancy may be provided by sealed coiled tubing 13. Alternatively the inner and outer walls (15, 21) maybe airtight and the space between the walls, containing the spring 13, sealed to form an airtight compartment. Air trapped between the inner wall 21 and the outer wall 15 may provide buoyancy to the tube 1. The buoyancy is provided in a similar manner

to arm bands and the walls may be made of similar material. In this case the air trapped in between the walls would not be sufficient to support the walls when the changing tube 1 is in the deployed state.

Figure 5 shows an alternative changing tube of square cross-section. The design of this changing tube is in many respects similar to the changing tube described with respect to Figure 1. Therefore only differences between the two changing tubes will be described. The square changing tube has four sides and it is therefore difficult to construct a coil of square section for use in such a changing tube. The changing tube in Figure 5 therefore has a wall spring 51 located in a pair of opposing sides of the changing tube 5. Only one wall spring 51 is shown in Figure 5. In the other sides are provided connecting bars which add structure to the walls. The wall spring and connecting bars together form a concertina like structure. The wall spring 51 is made up of a "zig-zagging" aluminium member attached to both square hoops 11 of the changing tube 5. As will be apparent to the person skilled in the art, in alternatives the "zig-zagging member" may be made of other materials.

When the changing tube 1 is deployed, the outer wall 12 may be seen by people outside the changing tube 1. It may, therefore, be desirable to use the outer wall 12 for advertising purposes. It may be that in some circumstances it

would be desirable to give away changing tubes 1 to people for no charge in order to obtain advertising space on, for example, beaches.

In an alternative embodiment, the coil and/or hoops of a circular changing tube of the type previously described may comprise inflatable hollow tubing. The coiled hollow tube may be made of a flexible plastics material. The tube may have a valve to allow inflation of the tube either by mouth, by air pump or by other means.

When a changing tube of this type is in its stored state the inflatable tube is deflated and is collapsible down to a near flat state. When in this stored state the inflatable tube may be pressed flat and rolled or folded as desired.

To deploy the changing tube, air is pumped into the inflatable tube causing the inflatable tube to expand. As the inflatable tube is inflated, the changing tube spreads upwards and may also spread outwards. The inflatable tube may be inflated until the changing tube reaches the desired height or the inflatable tube is fully inflated.

When the changing tube is in the deployed state, the side walls of the tube are supported by a combination of air pressure in the inflatable tube and natural

resistance to deformation of the plastic inflatable tubes and the side walls.